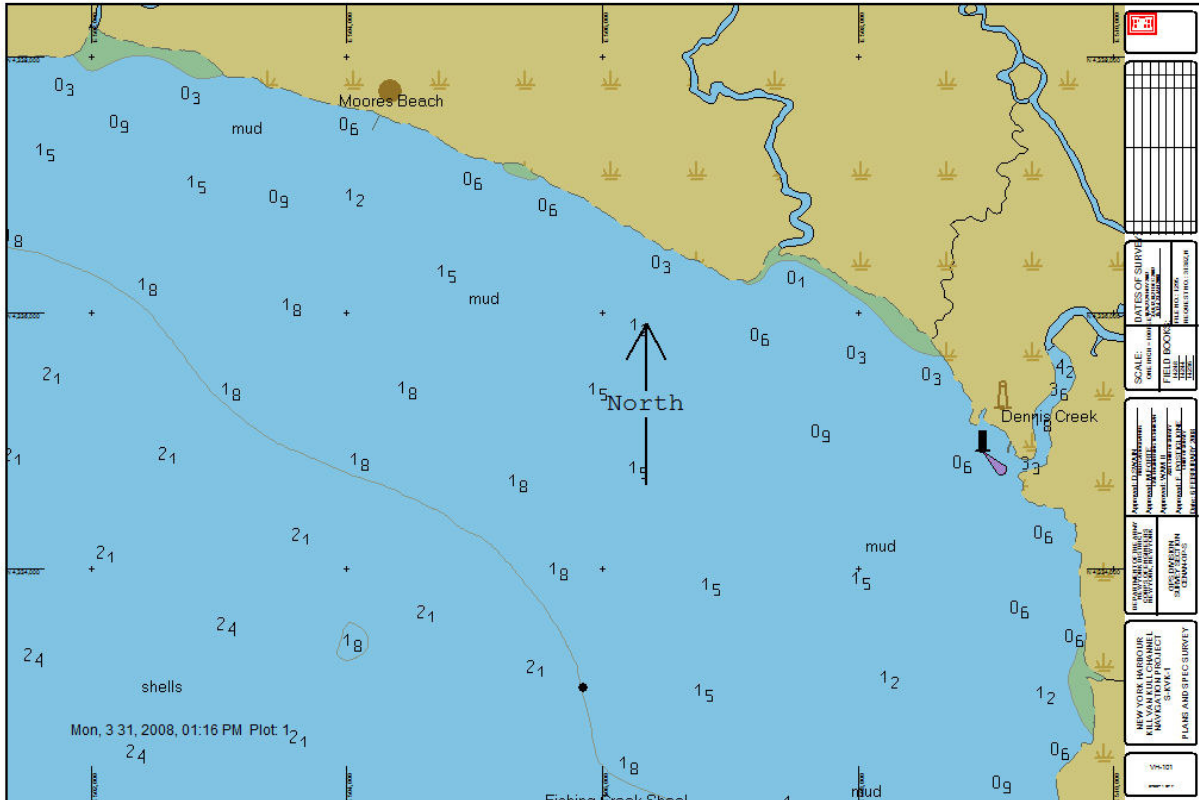


Hyplot Changes in Hypack 2008 — New York Border, DXF Output and Breaking the Memory Barrier

By Bill Bergman

New York Border



Developed for the New York Army Corps District, this is a very nice information border they use internally for their plotting work. It consists of 6 Information Blocks placed along the right edge of the plotting sheet. Information in the blocks can be edited in a new configuration dialog.

1. **Open the Hyplot Control Panel.**
2. **Select the 'Borders' page and click the ellipsis next to the New York Corps entry.** This will open the configuration dialog as seen below.

New York Border Style

Block 1: [Empty Box]

Block 2: [Empty Box]

Block 3: [Grid with labels A, B, C]

Block 4: [Grid with labels A, B, C, D]

Block 6: [Empty Box]

Block 3 (A)

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT
CORPS OF ENGINEERS
NEW YORK, NEW YORK 10278

Block 3 (B)

OPERATIONS DIVISION
SURVEY SECTION
CENAN-OP-S

Block 3 (C)

Approved: D. SWAIN
Approved: M. FORTE
Approved: WAM II
Approved: F. POSTIGLIONE
Date: 6 FEBRUARY 2008

OK
Cancel
Apply

New York Army Corps Border Configuration Options

3. **Access the editable fields for each block by clicking each rounded rectangle in turn.**
 - **Block 5**, the grid lines, had no user interface. This would be an area for 'hand written' notes on the actual plotted sheet.
 - **Block 6** enables the selection of either the Traditional Army Corps logo or the Modern Style. (I took the terminology from Wikipedia's US Army Corp of Engineers' page, assuming this is how Corps folks refer to the logo styles.)
4. **Preview the results (optional)** of your settings at any time by clicking the Apply button.
5. **When the settings are complete, click OK** to return to Hyplot.

Usage is very simple. There are no placement or sizing options required. Hyplot will scale to fit all the blocks based on the dimensions of the active plot sheet.

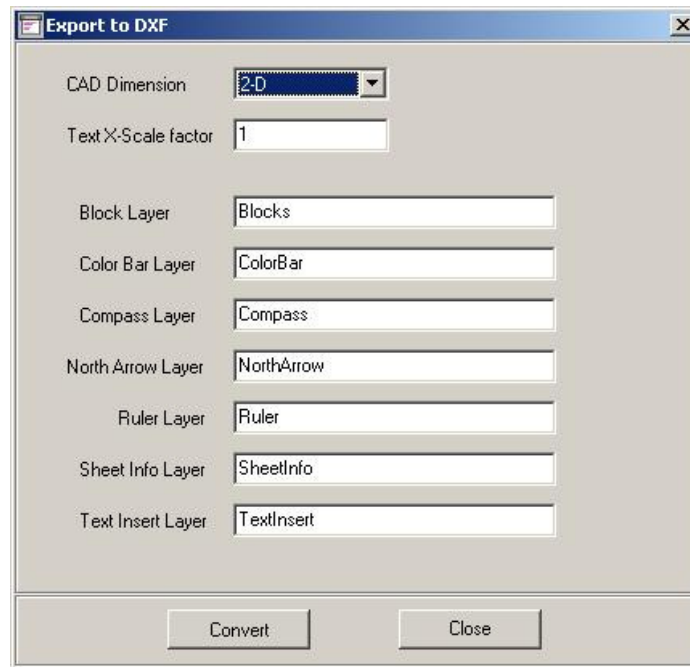
A second part of the New York Border concerns an XY grid. It is enabled automatically when selecting this border style. This behaves nearly identical to the Hyplot projection grid. The difference is in the format and placement of the labels. Instead of vertical and horizontal labels inside the double border area, the New York format places labels inside the plot area at an angle along the grid lines. Grid lines extend from the edge of the sheet, just long enough to underline the label. The rest of the grid uses standard XY Ticks.

Dxf Output

Previous versions of Hyplot had a DXF output capability limited to those chart formats and drawing elements which had routines written to perform the conversion. This approach had two major problems:

- If the code didn't exist, one got no output.
- Difficult to keep the display and conversion code synchronized for changes.

New Simplified DXF Output Dialog



In this version, we have taken a different approach to greatly expand DXF output without the need for such specialty code.

Hyplot now traps and converts drawing commands into DXF format on the fly. The goal is to produce a WYSIWYG (what you see is what you get) DXF file. Although this is a work in progress, as there are a few remaining drawing commands to trap, the results are already impressive. Hyplot is nearly at the stage of 'If you can see it on the screen or on your plot, you will see it in Autocad'.

Note: This refers to vectorized drawing commands only. Bitmap based drawing, as that used for BSB or TIF charts, is not supported.

The DXF output file has also been updated to a format compatible with Autocad 2000 to take advantage of DXF elements not found in earlier CAD versions.

Big Plots No Longer Mean 'Out of Memory'

Most Hyplot users have occasionally run across the messages below when attempting large plots. There has been little recourse in prior versions except to use a smaller plotting sheet size. The following is a discussion about memory size which is the important factor causing this problem.

Attempting a 2 GB Plot



The Factors in Memory Allocation

1. Number of bits required for a color.

Hypplot now always uses 24 bits per pixel color or 3 bytes. In the past, we tried allowing a user-selectable range of 8, 16 or 24 bpb. Although this solution could save memory and allow larger plots to succeed, in practice the results were often not nice or just plain did not work. With the integration of OpenGL, this option is no longer tenable and has been removed.

2. Dimensions of the plotting sheet.

There is not much we can do here except perhaps internally plot to a smaller size and stretch the resulting image to the desired dimensions. Again, though this could work, the results would show severe pixelation or blockyness on the resulting image.

3. Number of pixels per inch.

When adjusting the settings on your printer/plotter, your print setup dialog may have an option called DPI - Dots Per Inch. This is the number of individual ink dots your device can distinguish per inch of media. The higher the number, the higher the resolution, resulting in a nicer looking plot. This is similar to your screen - ie. angled lines at high resolution appear less jagged. However there is a cost - higher DPI means more memory. For instance assume a 30 x 24 inch plot.

- At **300 dpi** we need:
 $3 \text{ bytes color per dot} \times 300 \text{ dots per inch}^2 \times 30 \text{ inches} \times 24 \text{ inches}$
 $= 194,400,000 \text{ bytes}$
- At **600 dpi** we need:
 $3 \text{ bytes color per dot} \times 600 \text{ dots per inch}^2 \times 30 \text{ inches} \times 24 \text{ inches}$
 $= 777,600,000 \text{ bytes}$

This required memory will be even higher depending on the type of border used as they take up space as well.

So twice the dpi means quadruple the memory... and of course visa-versa.

In testing we have found very little perceivable difference between a 150 dpi vs 600 dpi plot. At 1/16th the memory requirement, it not only greatly increases maximum plot size but plots much quicker as well.

Not every printer/plotter allows user control over dpi. To get around this limitation, Hyplot provides a user-selectable DPI menu. (See graphic below). It will use this setting, not the device's setting, when allocating memory. The difference between the internal and device settings' dpi, if there is one, is handled automatically by Hyplot. So if you receive the famous 'DIB Error' dialog, click OK, try a lower Plot Resolution setting, and try again.

Setting Print Resolution in Hyplot

